

JUN 04 1999

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Dear Mr. Rosasco:

RE: Draft Remedial Investigation Report - Westlake Landfill Operable Unit 1 (March 1998)

We have completed our review of the draft remedial investigation (RI) report and the draft baseline risk assessment (BRA) report for the Westlake Landfill site operable unit 1. We have a few general concerns which we believe will require some discussion and resolution as we proceed with the decision process. We found the RI report to be generally adequate to support feasibility study; however, we believe the report could be improved by addressing the specific comments provided below.

**General Comment on the RI Report:**

We understand the rationale provided for the use of "reference levels", and we understand the desire to provide a screening level indication of site impacts. However, we have some concern that the RI makes judgements regarding the nature and extent of contamination based on comparisons with reference levels and drinking water standards. Comparisons with health-based levels and standards can be useful in indicating magnitude or significance but not generally in indicating the existence of site impacts. The appropriate use of conservative health-based screening levels is to compare with site concentrations in order to make a threshold judgement as to whether more sophisticated risk assessment should be undertaken, but not to determine whether contamination is present. Background generally serves as the ideal reference point for determining whether contamination is present. The presence of contamination can be significant to the site model and an understanding of contaminant migration regardless of whether it has significance from a health standpoint.

We also have some concern that the potential impacts to groundwater from uranium have not been evaluated. Depending on the alkalinity, significant levels of uranium can be leached from relatively low concentrations in soil. Also, as landfill conditions become more aerobic with time, uranium can become more mobile.

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**General Comment on the BRA:**

EPA Region 7 has a cooperative agreement with the Missouri Department of Health (MDOH) enabling MDOH to support the region in the review of superfund site risk assessments. MDOH has been engaged to serve this function on the Westlake Landfill site and will serve as the primary reviewer. It is our understanding that MDOH has provided comments to you on this document and that informal resolution of the comments was reached through direct discussion with Pam Holley. We will not reiterate those comments here; however, we are prepared to discuss those to the extent questions remain. We identified the following additional issues in our review of the document:

1. The risk calculations presented in the draft document do not indicate that response action is necessary based on comparison to the acceptable risk range provided for in the NCP. However, all appropriate hypothetical exposure pathways are not evaluated. See the second item below.
2. While it is appropriate to design future hypothetical receptor scenarios based on reasonably anticipated land-use, it is not appropriate to preclude evaluation of pathways based on the existence of deed restrictions, restrictive covenants, or other institutional controls. These existing institutional controls, in effect, are remedies, and the pathways they are intended to preclude should be evaluated in order to properly incorporate such restrictions into the remedial strategy as appropriate.
3. Although our guidance in this area is still in a state of development, we currently recommend that the radon pathway be excluded from calculations of excess lifetime cancer risk and that the radon pathway be evaluated independently. As we proceed with the decision process we will need to remain cognizant of how this might affect the development of risk-based goals.

**Specific Comments on the RI Report:****Section 3 Site Background**

This section provides very little information on the origin, composition, volume, or placement of the wastes that were received. Presumably this type of information provided one of the bases for the approach to remedial investigation. We understand that there is not a great amount of specific information available, but what is known should be briefly described.

Section 3.3 –A comparison of figures 3-6 and 6-7 appears to indicate that not all of the contaminated soil on the Ford property is included in the buffer zone.

#### Section 4 Site Investigation activities

Section 4.3, Over land Gamma Survey –The overland gamma survey can be a good tool for identifying “hot spots” or areas needing further investigation, but does not necessarily do a good job of delineating the areal extent of radiologically impacted areas, e.g, surface concentrations of Th230 in excess of 2000 pCi/g could go undetected. Page 18 -Based on our experience, we would expect background values to be closer to 10 uR/hr.

Page 20, last bullet of Section 4.4.1 –The last sentence is probably intended to read “...occurrences did *not* extend below...”

Page 23, second bullet –Further clarification on this point is needed. The Ladonda Shale does not exist in the Stratigraphic Succession in Missouri. There is a Lagonda Formation in the upper portion of the Desmoinesian Series which contains shale but it lies significantly higher in the stratigraphic succession than the Cheltenham Formation. Since McLaren/Hart cited naturally occurring radiation in the ‘Ladonda Shale’ as a basis for some of the assumptions made, a clearer discussion on the actual identification and radiological characteristics of the material should be provided.

Page 31, first bullet –The indicated range of background values is higher than we have seen at other sites in Missouri.

Page 31, second bullet –Please clarify this point. There is an apparent contradiction in that WL-105 is described as having a 10.5-foot thickness of material exhibiting elevated gamma readings, and is also described as a location having no elevated gamma readings of any kind. Here, and in the subsequent bullet, it is mentioned that overland gamma readings by RMC and McLaren/Hart did not yield comparable results, yet no explanation or potential explanations are found.

Page 38, second paragraph –The rationale provided in this paragraph should be reconciled with reported damage to these weirs during the May 1995 storm event.

Page 40, first full paragraph –Th230 is not a strong gamma emitter, and absent other radionuclides, might not be measurable with these techniques. We would not discount the results of laboratory analysis on this basis.

Section 4.5 –We suggest that a monitoring well summary table providing easy access to information such as ground elevation, construction parameters, open intervals, and monitored zone would be a very helpful reference.

Section 4.5.4, Summary of Results –Reference the location of groundwater data summaries.

Section 4.6.4, page 52, last paragraph –The use of “reference levels” to indicate whether or not contaminated sediments are migrating through surface water pathways is probably not appropriate.

Section 4.7.4, page 57 –Figures 4-15 and 4-16 present the sample locations but not the results of the methane gas survey as stated. It is unclear why these data are not considered relevant to site characterization. Methane generation could be a significant feasibility study and design consideration for certain remedial alternatives.

#### Section 5 Physical Characteristics of the Study Area

The inclusion of geologic cross sections depicting the contact between the fill material and the underlying alluvium and the relationship to bedrock would be very helpful in conveying the conceptual model of the site.

Section 5.6.2.4, page 78 –What method was used for the evaluation of slug test data? Reference the report containing the data and analysis. Table 5-3 should include the well number from which the values were calculated and explain the significance of the grouping.

#### Section 6 Nature and Extent of Radiologically Impacted Materials

Discussions on the nature of the radiologically impacted areas should include some interpretation of the extent to which the principal radionuclides appear to be co-located. This will have a bearing on interpretation of the gamma surveys. Note that the composition of the waste materials in the source areas may differ from materials deposited through erosional processes such as the soils on the Ford property.

Section 6.2, page 85 –While the isotopic concentrations presented in Table 6.6 appear consistent with other sites in the area, the gamma exposure rates appear to be significantly higher. To the extent gamma exposure rates are used to define the remedy, some further verification of these numbers might be indicated.

Section 6.3, page 85 –Reference levels - see general comment above.

Section 6.5.1, fifth paragraph, last sentence –Should this read “deeper” than 3 feet rather than “shallower”?

Section 6.5.2, page 92 –Again, we would not discount analytical results showing elevated levels of Th230 based upon a lack of elevated gamma measurements.

Section 6.6, first paragraph, last sentence –Should this read “deeper” than 3 feet instead of “shallower”?

## Section 7 Contaminant Extent, Fate and Transport

Section 7.1.1.1.1, page 98 –The radon flux measurement locations are on Figure 4-14, rather than 4-13.

Section 7.1.1.2, Fugitive Dust –The conclusions in this section appear to be more strongly stated than is warranted. Based upon the description provided, we would tend to disagree that a worst-case scenario was evaluated. Based upon the results of this single limited sampling event, one might reasonably conclude that atmospheric transport of fugitive dust does not appear to be a significant pathway for offsite migration under moderately windy conditions given that the site is undisturbed and vegetation remains in tact.

Section 7.1.2.1, Rainwater Runoff Transport –Reference to Figure 4-1 should be included.

Section 7.1.4.2, page 114, last paragraph –This attempts to justify the conclusion that groundwater transport is not a significant pathway for contaminant migration based on limited potential for exposure to groundwater. The potential for contaminant migration is independent of the potential for exposure.

Section 7.2.3.1, Leaching and Sorption –Generally speaking, uranium has a much smaller retardation factor than does radium and will have the greatest potential impacts to groundwater. Even though uranium occurs at much lesser concentrations within the source materials, we believe it would be appropriate to present this calculation as well. Also, assuming we are trying to place an upper bound on potential impacts, we are not convinced that an arithmetic average value from all samples taken provides the appropriate input concentration.

## Section 8 Non-Radiological Chemical Occurrences in Areas 1 & 2

Summary tables showing locations, detected concentration ranges and frequencies, and corresponding background concentrations would be a more usable way to present this information.

Section 8.6, Constituents Detected in Groundwater –It is difficult to sort out any patterns of contamination or judge the density of data with the presented information. We could not find an explanation of the monitoring well identification system. It is generally useful to map the areal extent of certain constituents with depth.

We appreciate the opportunity to review these documents. I can be reached by telephone at (913) 551-7710 or by e-mail at [wall.daniel@epamail.epa.gov](mailto:wall.daniel@epamail.epa.gov).

Sincerely,

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